松下电器产业株式会社 能源公司
检验报告
Test Report

No. B1001-2

共11页第1页

<table>
<tr><td rowspan="2">样品名称
Name of Sample</td><td>中文
Chinese</td><td colspan="3">锂离子电池组
NCR-B/659（11.1V 6000mAh 66Wh）</td></tr>
<tr><td>英文
English</td><td colspan="3">Lithium Ion Battery
NCR-B/659（11.1V 6000mAh 66Wh）</td></tr>
<tr><td>送检単位
Consignor</td><td colspan="4">松下电器产业株式会社 能源公司
Panasonic Corporation Energy Company</td></tr>
<tr><td>生产单位
Manufacturer</td><td colspan="4">松下电器产业株式会社 能源公司
Panasonic Corporation Energy Company</td></tr>
<tr><td>检验方法
Test Method</td><td colspan="4">联合国《关于危险货物运输的建议书》
UNITED NATIONS “Recommendations on the TRANSPORT OF DANGEROUS GOODS ”</td></tr>
<tr><td>判定标准
Criterion</td><td colspan="4">联合国《关于危险货物运输的建议书》
UNITED NATIONS “Recommendations on the TRANSPORT OF DANGEROUS GOODS ”</td></tr>
<tr><td>样品外観
Appearance</td><td colspan="4">黑色长方形块状固体
Black Rectangle Blocky Solid</td></tr>
<tr><td>检测起迄日期
Test Date</td><td colspan="2">2009/12/11-2010/01/12</td><td>样品编号
Sample No</td><td>/</td></tr>
<tr><td>检测项目
Test Items</td><td colspan="4">高度模拟试检； 热测试； 振动试检； 冲击试检； 外短路试检；
冲撞试检； 过充电试检
Altitude simulation, Thermal test, Vibration test, Shock, External short circuit, Impact, Overcharge</td></tr>
<tr><td>检验结论 Conclusion</td><td colspan="4">受检样品通过 UN38.3检测，检测合格。
The sample has passed the test items of UN38.3.
日期(date):2010年(y) 02月(m) 08日(d)</td></tr>
<tr><td>备注
Remark</td><td colspan="4">Similar Model Certification with the data of NCR-B/665
Same cell, Same construction battery pack
Ratio of (NCR-B/659)/(NCR-B/665) : [+]=100.0%, [-]=100.0%, [Electrolyte]=100.0%</td></tr>
<tr><td>受检单位地址
Consignor Address</td><td colspan="2">日本:大阪府守口市松下町1番1号
1-1 Matsushita-cho, Moriguchi City, Osaka, Japan</td><td>邮政编码
Post Code</td><td>570-8511</td></tr>
</table>

批准人职务(the title of approver)：
☐质量保证部长(Director of Quality Assurance)
■质量保证科长(Manager of Quality Assurance)
☐质量保证主任工程师(Chief Engineer of QA)

批准 Approver： J. Itami

审核 Checker： H.Sato

主检 Appraiser： S.Iwata

松下电器产业株式会社 能源公司
检验报告
Test Report

No. B1001-2

序号 No	检测项目 Name of Test Items	标准要求或标准款号 Standard Requirement or the Clause Number of Standard	检验结果 Test Result	本项结论 Test Conclusion	备注 Remark
1	高度模拟试检 Altitude simulation	试检和标准手册38.3(4^{th}) 38.3 Test T-1 UN Manual of Tests and Criteria Section (4^{th}) 38.3 Test T-1	见附表1 See Appendix 1	合格 Passed	/
2	热测试检 Thermal test	试检和标准手册38.3(4^{th}) 38.3 Test T-2 UN Manual of Tests and Criteria Section (4^{th}) 38.3 Test T-2	见附表2 See Appendix 2	合格 Passed	/
3	振动试检 Vibration test	试检和标准手册38.3(4^{th}) 38.3 Test T-3 UN Manual of Tests and Criteria Section (4^{th}) 38.3 Test T-3	见附表3 See Appendix 3	合格 Passed	/
4	冲击试检 Shock	试检和标准手册38.3(4^{th}) 38.3 Test T-4 UN Manual of Tests and Criteria Section (4^{th}) 38.3 Test T-4	见附表4 See Appendix 4	合格 Passed	/
5	外短路试检 External short circuit	试检和标准手册38.3(4^{th}) 38.3 Test T-5 UN Manual of Tests and Criteria Section (4^{th}) 38.3 Test T-5	见附表5 See Appendix 5	合格 Passed	/
6	冲撞试检 Impact	试检和标准手册38.3(4^{th}) 38.3 Test T-6 UN Manual of Tests and Criteria Section (4^{th}) 38.3 Test T-6	见附表6 See Appendix 6	合格 Passed	/
7	过充电试检 Overcharge	试检和标准手册38.3(4^{th}) 38.3 Test T-7 UN Manual of Tests and Criteria Section (4^{th}) 38.3 Test T-7	见附表7 See Appendix 7	合格 Passed	/

检验环境条件 / Test Environment Condition	环境温度:20-25℃ / Ambient Temperature:20-25℃

分包检验状况 Subcontracted Test Condition					
检测项目 Test Items	/				
分包实验室 Subcontracted Laboratory	名称 Name	/	邮编 Post Code	/	
	地址 Address	/	电话 Tel	/	

松下电器产业株式会社　能源公司
检验报告
Test Report

No. B1001-2

A : 电池判断新机种与否的检查表

(Checklist for Judging New Type Cell or not)

被判定的电池: NCR18650A　　比较参照电池: NCR18650A

没有全部的项目变更的情况不是新机种
When there is no change in all items, it is NOT considered to be a New Type Cell.

确认项目 **Check item**	受影响的要素 **The element which is given influence**	变更的存在 **Presence of change**
电池尺寸 Cell dimensions	Are the dimensions of this cell the same as those of the test completion cell?	-
安全零部件和机械构件 Safety parts and mechanical components	Are the safety parts and mechanical components of this cell the same as those of the test completion cell?	-
电池的正极材料 Cathode material system	Is cathode material system of this cell the same as that of the test completion cell?	-
电池的负极材料 Anode material system	Is anode material system of this cell the same as that of the test completion cell?	-
电池的电解液材料 Electrolyte material system	Is electrolyte material system of this cell the same as that of the test completion cell?	-
电池的正极质量 Mass of cathode material	Is mass difference of the design center of each cell concerning cathode less than 0.1 g or 20% ?	-
电池的負极质量 Mass of anode material	Is mass difference of the design center of each cell concerning anode less than 0.1 g or 20% ?	-
电池的电解液质量 Mass of electrolyte	Is mass difference of the design center of each cell concerning electrolyte less than 0.1 g or 20% ?	-
判断结果 Judgment result	"新机种"、非"新机种" New Type or not	☐ New ☑ Not new

变更有(Change) ⇒ ○ 、没有变更(No change) ⇒ －

松下电器产业株式会社 能源公司
检验报告
Test Report

No. B1001-2

B : 组电池判断新机种与否的检查表
(Checklist for Judging New Type Battery or not）

被判定的组电池 : NCR-B/659　　比较参照组电池 : NCR-B/665

没有全部的项目变更的情况不是新机种
When there is no change in all items, it is NOT considered to be a New Type Battery.

	确认项目 **Test Item (Function)**	受影响的要素 **The element which is given influence**	变更的存在 **Presence of change**
T 1	高度模拟试检 (减压负荷) Altitude Simulation (Decompression load)	Crimped part, Gasket (Cell) Gas Release Vent, Cell Case (Cell) Pack (Plastic) Case Holding Member (Insulator, Insulation Tape, Both Sides Tape) Coating materials	- - - - - -
T 2	热测试检(高温／低温重复) Thermal Shock (Repetition of high and low temp.)		
T 3	振动试检 (振动负荷) Vibration (Vibration load)	Finished state of Wound Electrodes (Cell) Electric wiring member Electronic Parts on a circuit board ・Cell Holding Member (Adhesive, Both Sides Tape, Lib of Plastic Case)	- - - -
T 4	冲击试检 (冲击负荷) Shock (Shock load)		
T 5	外短路试检 (短路电流) External Short Circuit (Short current)	Over-voltage Protection Current Control Device Safety Device of cell (Cell) Lead Tab	- - - -
T 6	[Cell] 冲撞试检 (冲突负荷) [Cell] Impact (Crash load)	Separator (Cell) Insulation State in a cell (Cell)	- -
T 7	[Pack] 过充电试检 (充电负荷) [Pack] Overcharge (Charge load)	Overcharge Protection Thermal Device Safety Device of cell (Cell)	- - -
T 8	[Cell] 强制放电试检 (过放电负荷) [Cell] Forced Discharge (Over discharge load)	Finished state of Wound Electrodes (Cell)	-
	判断结果 Judgment result	"新机种"、非"新机种" New Type or not	☐ New ☑ Not new

变更有(Change) ⇒ ○ 、没有变更(No change) ⇒ －

松下电器产业株式会社 能源公司

检验报告 ------附表1

Test Report

No. B1001-2

Similar Model Data

Appendix 1

序号 No	T-1	检测项目名称 Name of Test Items		高度模拟试检 Altitude simulation				
样品编号 Sample No	样品状态 Sample Status	试检前 Before		试检后 After		质量 Mass Loss (%)	剩余电压 Residual OCV (%)	其他 現象 Other Event
		质量 Weight (g)	开路电压 OCV (V)	质量 Weight (g)	开路电压 OCV (V)			
1	首次充满 Initial 100% charge	305.76	12.475	305.74	12.436	-0.01%	99.7%	0
2	首次充满 Initial 100% charge	305.57	12.472	305.55	12.432	-0.01%	99.7%	0
3	首次充满 Initial 100% charge	305.87	12.476	305.86	12.437	0.00%	99.7%	0
4	首次充满 Initial 100% charge	305.92	12.476	305.90	12.435	-0.01%	99.7%	0
5	首次放光 Initial 100% discharge	306.01	9.923	306.00	9.930	0.00%	100.1%	0
6	首次放光 Initial 100% discharge	305.94	9.924	305.93	9.933	0.00%	100.1%	0
7	首次放光 Initial 100% discharge	305.54	9.924	305.53	9.932	0.00%	100.1%	0
8	首次放光 Initial 100% discharge	305.63	9.924	305.62	9.932	0.00%	100.1%	0
9	50次充满 50cycles 100% charge	305.65	12.458	305.65	12.447	0.00%	99.9%	0
10	50次充满 50cycles 100% charge	305.23	12.456	305.24	12.445	0.00%	99.9%	0
11	50次充满 50cycles 100% charge	305.96	12.464	305.97	12.453	0.00%	99.9%	0
12	50次充满 50cycles 100% charge	305.70	12.453	305.71	12.443	0.00%	99.9%	0
13	50次放光 50cycles 100% discharge	305.71	9.963	305.72	9.966	0.00%	100.0%	0
14	50次放光 50cycles 100% discharge	305.92	9.966	305.93	9.968	0.00%	100.0%	0
15	50次放光 50cycles 100% discharge	305.84	9.955	305.84	9.958	0.00%	100.0%	0
16	50次放光 50cycles 100% discharge	306.05	9.966	306.06	9.968	0.00%	100.0%	0

备注: L-漏液, V-漏气, D-解体, R-破裂, F-起火, 0-无漏液，无漏气，无解体，无破裂，无起火
Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.

松下电器产业株式会社 能源公司

检验报告 ------附表2

Test Report

No. B1001-2

Similar Model Data

Appendix 2

序号 No	T-2	检测项目名称 Name of Test Items		热测试检 Thermal test				
样品编号 Sample No	样品状态 Sample Status	试检前 Before		试检后 After		质量 Mass Loss (%)	剩余电压 Residual OCV (%)	其他現象 Other Event
		质量 Weight (g)	开路电压 OCV (V)	质量 Weight (g)	开路电压 OCV (V)			
1	首次充满 Initial 100% charge	305.74	12.436	305.76	12.319	0.01%	99.1%	0
2	首次充满 Initial 100% charge	305.55	12.432	305.56	12.314	0.00%	99.1%	0
3	首次充满 Initial 100% charge	305.86	12.437	305.87	12.321	0.00%	99.1%	0
4	首次充满 Initial 100% charge	305.90	12.435	305.92	12.317	0.01%	99.1%	0
5	首次放光 Initial 100% discharge	306.00	9.930	306.02	9.932	0.01%	100.0%	0
6	首次放光 Initial 100% discharge	305.93	9.933	305.95	9.936	0.01%	100.0%	0
7	首次放光 Initial 100% discharge	305.53	9.932	305.55	9.935	0.01%	100.0%	0
8	首次放光 Initial 100% discharge	305.62	9.932	305.63	9.936	0.00%	100.0%	0
9	50次充满 50cycles 100% charge	305.65	12.447	305.68	12.330	0.01%	99.1%	0
10	50次充满 50cycles 100% charge	305.24	12.445	305.26	12.330	0.01%	99.1%	0
11	50次充满 50cycles 100% charge	305.97	12.453	305.99	12.336	0.01%	99.1%	0
12	50次充满 50cycles 100% charge	305.71	12.443	305.73	12.328	0.01%	99.1%	0
13	50次放光 50cycles 100% discharge	305.72	9.966	305.74	9.976	0.01%	100.1%	0
14	50次放光 50cycles 100% discharge	305.93	9.968	305.95	9.977	0.01%	100.1%	0
15	50次放光 50cycles 100% discharge	305.84	9.958	305.87	9.970	0.01%	100.1%	0
16	50次放光 50cycles 100% discharge	306.06	9.968	306.08	9.980	0.01%	100.1%	0

备注: L-漏液, V-漏气, D-解体, R-破裂, F-起火, 0-无漏液,无漏气,无解体,无破裂,无起火
Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.

松下电器产业株式会社 能源公司

检验报告 ------附表3

Test Report

No. B1001-2

Similar Model Data

Appendix 3

序号 No	T-3	检测项目名称 Name of Test Items		振动试检 Vibration test				
样品编号 Sample No	样品状态 Sample Status	试检前 Before		试检后 After		质量 Mass Loss (%)	剩余电压 Residual OCV (%)	其他現象 Other Event
		质量 Weight (g)	开路电压 OCV (V)	质量 Weight (g)	开路电压 OCV (V)			
1	首次充满 Initial 100% charge	305.76	12.319	305.71	12.321	-0.02%	100.0%	0
2	首次充满 Initial 100% charge	305.56	12.314	305.50	12.320	-0.02%	100.0%	0
3	首次充满 Initial 100% charge	305.87	12.321	305.82	12.327	-0.02%	100.0%	0
4	首次充满 Initial 100% charge	305.92	12.317	305.86	12.322	-0.02%	100.0%	0
5	首次放光 Initial 100% discharge	306.02	9.932	305.95	9.924	-0.02%	99.9%	0
6	首次放光 Initial 100% discharge	305.95	9.936	305.88	9.927	-0.02%	99.9%	0
7	首次放光 Initial 100% discharge	305.55	9.935	305.50	9.927	-0.02%	99.9%	0
8	首次放光 Initial 100% discharge	305.63	9.936	305.57	9.927	-0.02%	99.9%	0
9	50次充满 50cycles 100% charge	305.68	12.330	305.63	12.332	-0.02%	100.0%	0
10	50次充满 50cycles 100% charge	305.26	12.330	305.21	12.332	-0.02%	100.0%	0
11	50次充满 50cycles 100% charge	305.99	12.336	305.94	12.338	-0.02%	100.0%	0
12	50次充满 50cycles 100% charge	305.73	12.328	305.68	12.329	-0.02%	100.0%	0
13	50次放光 50cycles 100% discharge	305.74	9.976	305.70	9.973	-0.01%	100.0%	0
14	50次放光 50cycles 100% discharge	305.95	9.977	305.91	9.973	-0.01%	100.0%	0
15	50次放光 50cycles 100% discharge	305.87	9.970	305.82	9.966	-0.02%	100.0%	0
16	50次放光 50cycles 100% discharge	306.08	9.980	306.03	9.976	-0.02%	100.0%	0

备注: L-漏液, V-漏气, D-解体, R-破裂, F-起火, 0-无漏液, 无漏气, 无解体, 无破裂, 无起火
Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.

松下电器产业株式会社 能源公司

检验报告 ------附表4

Test Report

No. B1001-2

Similar Model Data

Appendix 4

序号 No	T-4	检测项目名称 Name of Test Items		冲击试检 Shock				
样品编号 Sample No	样品状态 Sample Status	试检前 Before		试检后 After		质量 Mass Loss (%)	剩余电压 Residual OCV (%)	其他現象 Other Event
		质量 Weight (g)	开路电压 OCV (V)	质量 Weight (g)	开路电压 OCV (V)			
1	首次充满 Initial 100% charge	305.71	12.321	305.71	12.316	0.00%	100.0%	0
2	首次充满 Initial 100% charge	305.50	12.320	305.52	12.312	0.01%	99.9%	0
3	首次充满 Initial 100% charge	305.82	12.327	305.82	12.319	0.00%	99.9%	0
4	首次充满 Initial 100% charge	305.86	12.322	305.87	12.315	0.00%	99.9%	0
5	首次放光 Initial 100% discharge	305.95	9.924	305.97	9.929	0.01%	100.1%	0
6	首次放光 Initial 100% discharge	305.88	9.927	305.90	9.932	0.01%	100.1%	0
7	首次放光 Initial 100% discharge	305.50	9.927	305.50	9.928	0.00%	100.0%	0
8	首次放光 Initial 100% discharge	305.57	9.927	305.59	9.932	0.01%	100.1%	0
9	50次充满 50cycles 100% charge	305.63	12.332	305.63	12.327	0.00%	100.0%	0
10	50次充满 50cycles 100% charge	305.21	12.332	305.21	12.328	0.00%	100.0%	0
11	50次充满 50cycles 100% charge	305.94	12.338	305.93	12.333	0.00%	100.0%	0
12	50次充满 50cycles 100% charge	305.68	12.329	305.68	12.325	0.00%	100.0%	0
13	50次放光 50cycles 100% discharge	305.70	9.973	305.70	9.973	0.00%	100.0%	0
14	50次放光 50cycles 100% discharge	305.91	9.973	305.91	9.973	0.00%	100.0%	0
15	50次放光 50cycles 100% discharge	305.82	9.966	305.83	9.966	0.00%	100.0%	0
16	50次放光 50cycles 100% discharge	306.03	9.976	306.04	9.976	0.00%	100.0%	0

备注: L-漏液, V-漏气, D-解体, R-破裂, F-起火, 0-无漏液, 无漏气, 无解体, 无破裂, 无起火
Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.

松下电器产业株式会社 能源公司

检验报告 ------附表5

Test Report

No. B1001-2

Similar Model Data

Appendix 5

序号No	T-5	检测项目名称 Name of Test Items	外短路试检 External short circuit
样品编号 Sample No	样品状态 Sample Status	样品表面最高温度 Max. External Temperature (℃)	其他现象 Other Event
1	首次充满 Initial 100% charge	55.8	0
2	首次充满 Initial 100% charge	55.6	0
3	首次充满 Initial 100% charge	55.7	0
4	首次充满 Initial 100% charge	55.4	0
5	首次放光 Initial 100% discharge	55.8	0
6	首次放光 Initial 100% discharge	55.6	0
7	首次放光 Initial 100% discharge	55.5	0
8	首次放光 Initial 100% discharge	55.3	0
9	50次充满 50cycles 100% charge	55.8	0
10	50次充满 50cycles 100% charge	55.6	0
11	50次充满 50cycles 100% charge	55.7	0
12	50次充满 50cycles 100% charge	55.3	0
13	50次放光 50cycles 100% discharge	55.6	0
14	50次放光 50cycles 100% discharge	55.6	0
15	50次放光 50cycles 100% discharge	55.8	0
16	50次放光 50cycles 100% discharge	55.3	0

备注: D-解体, R-破裂, F-起火, 0-无解体, 无破裂, 无起火

Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.

松下电器产业株式会社 能源公司

检验报告 ------附表6

Test Report

No. B1001-2

Component cell:NCR18650A Appendix 6

共11页第10页

序号No	T-6	检测项目名称 Name of Test Items	冲撞试检 Impact
样品编号 Sample No	样品状态 Sample Status	样品表面最高温度 Max. External Temperature (℃)	其他现象 Other Event
1	首次半充(横向) Initial 50% charge (horizontal)	135	0
2	首次半充(横向) Initial 50% charge (horizontal)	122	0
3	首次半充(横向) Initial 50% charge (horizontal)	129	0
4	首次半充(横向) Initial 50% charge (horizontal)	134	0
5	首次半充(横向) Initial 50% charge (horizontal)	132	0
6	首次半充(纵向) Initial 50% charge (vertical)	—	—
7	首次半充(纵向) Initial 50% charge (vertical)	—	—
8	首次半充(纵向) Initial 50% charge (vertical)	—	—
9	首次半充(纵向) Initial 50% charge (vertical)	—	—
10	首次半充(纵向) Initial 50% charge (vertical)	—	—
11	50次放光(横向) 50cycles 100% discharge (horizontal)	116	0
12	50次放光(横向) 50cycles 100% discharge (horizontal)	120	0
13	50次放光(横向) 50cycles 100% discharge (horizontal)	124	0
14	50次放光(横向) 50cycles 100% discharge (horizontal)	123	0
15	50次放光(横向) 50cycles 100% discharge (horizontal)	121	0
16	50次放光(纵向) 50cycles 100% discharge (horizontal)	—	—
17	50次放光(纵向) 50cycles 100% discharge (horizontal)	—	—
18	50次放光(纵向) 50cycles 100% discharge (horizontal)	—	—
19	50次放光(纵向) 50cycles 100% discharge (horizontal)	—	—
20	50次放光(纵向) 50cycles 100% discharge (horizontal)	—	—

备注: D-解体, R-破裂, F-起火, 0-无解体, 无破裂, 无起火

Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.

松下电器产业株式会社 能源公司

检验报告 ------附表7

Test Report

No. B1001-2

Similar Model Data

Appendix 7

共11页第11页

序号No	T-7	检测项目名称 Name of Test Items	过充电试检 Overcharge
样品编号 Sample No	样品状态 Sample Status	试检現象 Event	
1	首次充满 Initial 100% charge	0	
2	首次充满 Initial 100% charge	0	
3	首次充满 Initial 100% charge	0	
4	首次充满 Initial 100% charge	0	
5	50次充满 50cycles 100% charge	0	
6	50次充满 50cycles 100% charge	0	
7	50次充满 50cycles 100% charge	0	
8	50次充满 50cycles 100% charge	0	

备注: D-解体, F-起火, 0-无解体, 无起火

Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, 0-No leakage, no venting, no disassembly, no rupture & no fire.